



The description of post-operative nausea and vomiting (PONV) in curettage while under general anesthesia

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CROSS-SECTIONAL STUDY

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abstract

Background General anesthesia is the process of eliminating consciousness using medications. Curettage is the procedure to remove leftover conception material from the uterus. Currently, 37.5% of curettage procedures are due to blighted ovum. The curettage procedure causes discomfort, so it needs to be assisted with anesthesia. **Purpose:** to determine the incidence of PONV in post-curettage patients under general anesthesia. **Method** Descriptive research with a cross-sectional design. The respondents were 47 women who underwent curettage due to incomplete abortion, retained placenta, and blighted ovum, selected using a purposive sampling technique. The instruments used are a demographic data questionnaire and The Rhodes Index Nausea, Vomiting and Retching (RINVR). Data analysis employs frequency distribution. **Result** The characteristics of the respondents are dominated by young adults (89.4%) who have experienced PONV (23.4%). Other characteristics include that all of them do not smoke and use opioids. Based on the RINVR scale, the respondents predominantly experience light PONV (46.8%). **Conclusion** Post-curettage patients under general anesthesia predominantly experience light PONV (Postoperative Nausea and Vomiting).

Keywords: curettage; general anesthesia; postoperative nausea and vomiting

Introduction

Based on a World Health Organization (WHO) study, blighted ovum reached 51% in ASEAN. While in Indonesia it was found in 37% of every 100 pregnancies. The incidence of blighted ovum is the second cause of early miscarriage, which is 37.5% in a previous research study involving 17,810 early trimester pregnant women experiencing blighted ovum and abortion by curettage [1,2]. Curettage is a procedure to scrape or clean the results of conception using a scraping spoon. This medical action is useful for removing tissue in the uterus such as tumors or fetuses that cannot develop again for medical reasons [3].

This action often uses anesthesia as one of the preoperative procedures to reduce the pain that occurs during the surgical process [4,5] Anesthesia is divided into 3 categories, namely local, regional, and general anesthesia. Each type of anesthesia has its own way of working and functionality. Curettage usually uses general anesthesia which can be administered through inhaled gas or medication through the blood vessels [6]. However, the administration of anesthesia also has side effects that are seen after the patient has completed the operation. Side effects of general anesthesia include nausea and vomiting, sore throat, hypothermia, headache and others [7].

Nausea and vomiting after anesthesia or *Post Operative Nausea and Vomiting* (PONV) is the most common side effect complained by patients. WHO recorded Post Operative Nausea and Vomiting (PONV) that occurs after surgery as 30% of more than 100 million surgical patients worldwide [8]. The prevalence of PONV in Indonesia has not been clearly recorded, but the incidence of PONV is quite high at 36.2% [9,10].

Previous research showed 14.92% of patients experienced PONV in the first 6 hours and there was no significant difference in the incidence of PONV within 24 hours with the type of surgery and the time of surgery. Another study showed that out of 139 patients, the incidence of Post Operative Nausea and Vomiting (PONV) was 16 cases (11.5%). PONV under general anesthesia was most common in patients With American Society of Anesthesiologists (ASA) status I (13%). The proportion of PONV patients based on the type of anesthetic drug is in the type of intravenous anesthetic drug as many as 16 cases [9,11].

The results of preliminary studies that have been conducted by researchers at the Prof. Dr. Margono Soekarjo Purwokerto Hospital there are 47 patients who have performed curettage operations from September to November 2023 with diagnoses of blighted ovum, abortion, and placenta remnants. In the data, patients used general anesthesia for anesthesia during curettage. Researchers noted complaints of PONV from patients who received general anesthesia during curettage [12–14]. The occurrence of PONV can interfere with one of the basic human needs, namely a sense of security and comfort. Based on the above assumptions, the researcher is interested in conducting a study with the title "Overview of Post Operative Nausea and Vomiting

(PONV) in Post Curettage Patients with General Anesthesia".

Material and Methods

Descriptive study research using a cross-sectional design. The research sample was calculated using the Slovin formula with a tolerance of 10% of the total population of 192 people, obtaining a minimum sample of 72 people. The sampling technique used *purposive sampling* with inclusion criteria, namely women aged 17 - 45 years, undergoing curettage due to incomplete abortion, remaining placenta, or blighted ovum. The exclusion criteria are respondents who have limitations such as illiteracy, speech impairment, hearing impairment, and visual impairment.

Data were collected using the APFEL questionnaire to determine the characteristics of respondents such as gender, smoking history, PONV history, and use of opioid drugs during surgery. As well as PONV monitoring sheets using *The Rhodes Index Nausea, Vomiting, and Retching* (RINVR) score which has a reliability value based on the *Cronbach's alpha* test of 0.912-0.968. As well as the validity of the results of the *Spearman's coefficients* test: 0.692-1.000, $P < 0.0001$, and Weighted kappa: 0.932-1.000 [15] Data collection The study was conducted from April to May 2024 at RSUD Prof. Dr. Margono Soekarjo, Purwokerto. Data analysis using frequency distribution in SPSS IBM 16. Ethical consideration The research was conducted with ethical approval contained in letter number 420/03228.

Result

The results of this study were obtained from primary data by filling out questionnaires to post-curettage patients who were included in the inclusion criteria from April 2024 - May 2024. Based on the

results of data collection, it was known that there were 91 patients who performed curettage, biopsy, and PA curettage in that time span, but only 47 were included in the inclusion criteria. The following results were obtained

The description of the characteristics of the 47 respondents who filled out the questionnaire is shown in (table 1) as follows:

Table 1 Characteristics of Respondents (n= 47)

Variable	Frequency (n)	Percentage (%)
Diagnosis		
Abortus Incomplete	26	55.3
Placenta	6	12.8
Blighted Ovum	15	31.9
Age		
Teens	2	4.3
Early Adulthood	42	89.4
Middle Adulthood	3	6.4
Smoking History		
Yes	0	0
No	47	100
History of Opioid		
Yes	47	100
No	0	0
History of PONV		
Yes	11	23.4
No	36	76.6

Based on Table 1, it is known that all respondents do not smoke and have a history of opioid use, namely 47 people (100%). The age of respondents was mostly in the early adult range (21-40 years) as many as 89.4% (42 people), with a diagnosis of incomplete abortion at 55.3% (26 people) and as many as 23.4% (11 people) had experienced PONV.

In addition, RINVR scoring was used to see the description of the incidence of PONV in post-curettage patients using general anesthesia presented in (table 2) as follows:

Table 2 The incidence of PONV in curettage patients diagnosed with incomplete abortion, residual placenta, and blighted ovum under general anesthesia (n= 47)

	Variable					
	AI		RP		BO	
	n	%	n	%	n	%
Light	11	50	4	18.2	7	31.8
Medium	11	57.9	1	5.3	7	36.8
Severe	4	66.7	1	16.7	1	16.7
Total	26	55.3	6	12.8	15	31.9

Note: AI = Abortus Incomplete, RP= Residual Placenta, BO= Blighted Ovum

Based on Table 2, it is known that the incidence of PONV is dominant at a light level namely 22 people. PONV occurred in incomplete abortion, namely, 55.3% (26 people), and 4 of them experienced Severe PONV (66.7%)

Discussions

The results of the study of 47 respondents showed that all respondents were female (100%). In line with research [16], the majority of respondents who experienced nausea and vomiting were women. Previous research found that women predominantly experience nausea and vomiting after surgery with anesthesia. Female gender is a predictor of the cause of PONV with an estimated risk three times greater than men. This cause is related to the high estrogen hormone that affects the vomiting center. Unstable estrogen sends negative signals to the hypothalamus and pituitary gland. The pituitary gland produces hormones that regulate various body functions including metabolism. High metabolism due to estrogen hormone instability causes an increase in stomach acid. Increased stomach acid triggers nausea and vomiting [17–20]. According to the researcher, the same thing was found during field research, namely as many as 6 out of 11 female respondents with a history

of PONV stated that they felt severe nausea. This finding illustrates that female gender can aggravate the effects of postoperative nausea and vomiting.

Meanwhile, based on age, it is known that the majority of respondents are in the early adult age range, namely 21-40 years. As many as 89.4% (42 people) are in the early adult age range, 6.4% (3 people) Middle adult level, and 4.3% (2 people) others are included in the adolescent range. In line with previous research, the respondents were dominated by the age of 23-40 years as much as 83.5%. According to previous research, age is not associated with the incidence of PONV, but judging from the results of the distribution of research data, the incidence of PONV occurs mostly in the age range of 26-35 years with a percentage of nausea 54.2% [9,21]. In contrast to other studies that state the relationship between PONV and age. This is related to the experience and ability to control nausea and vomiting with age. Other conditions such as unstable psychology after curettage increase stressors that trigger a rise in stomach acid and bring up feelings of nausea and vomiting [19,22,23]. According to the researcher, in this study, it was found that 5 out of 6 respondents with severe nausea complaints were in the early adult age range of 25 years - 40 years. this picture shows that younger ages tend to have more severe PONV levels.

All respondents were found to have no history of smoking (100%). In line with the previous study which showed 71.4% of respondents did not have a history of smoking. 37.5% of patients who did not smoke experienced PONV. According to previous research, smoking is related to the incidence of nausea and vomiting. This condition is the body of active smokers used to detoxify high toxins from cigarette smoke so that exposure to opioids and volatile agents in the blood concentration

can drop faster [19,21,23,24]. According to the researcher, the condition of the respondents in this study, all of whom did not smoke, was thought to play a role in the incidence of PONV. This can be seen from the picture that all 100% of respondents (47 people) experienced PONV, and 6 of them were at a severe level.

In addition, all respondents used opioids (100%). In line with previous research, opioid use can increase the risk of PONV. Another study found that 36.2% of respondents who used opioids experienced mild to moderate nausea and vomiting. Opioids are a class of drugs to relieve pain. The opioid system of action is attached to the surface of cells that send signals to the nervous system so as to prevent the delivery of pain responses [25,26]. The use of opioids can affect the stimulus that affects the incidence of nausea and vomiting in patients. The use of opioids is common in major operations with high pain levels [22,27-29]. Based on the observations of researchers using intraoperative opioids in this study using ketamine and fentanyl, it appears that there is a link between the use of opioids and the incidence of PONV in respondents.

The results showed that 11 people (23.4%) had a history of PONV. In line with previous research, 254 respondents had a history of PONV. Previous research stated the same thing, namely the incidence of nausea and vomiting tended to occur in respondents with a history of PONV. The previous experience of nausea and vomiting gives an idea of the respondent's body resistance to the effects of pharmacological agents so that respondents who have experienced nausea and vomiting due to the effects of anesthesia tend to experience the same thing [23,28,29]. According to the researcher, similar conditions were described in this study where 11 out of 47 respondents who had a history of PONV felt moderate to severe levels of nausea and

vomiting. This shows that the previous PONV experience can be repeated.

Measurement of PONV incidence in this study used The Rhodes Index Nausea, Vomiting and Retching (RINVR) questionnaire. The RINVR questionnaire is an instrument to measure the incidence of nausea and or vomiting that occurs in the first 24 hours after surgery. There are five categories of nausea and vomiting levels, namely no nausea, mild nausea and vomiting, moderate nausea and vomiting, and severe nausea and vomiting. The results of this study showed that the incidence of nausea and vomiting in curettage patients with general anesthesia was predominantly at a mild level, with as many as 22 people And 55.3% (26 people) who underwent curettage due to incomplete abortion experienced PONV. In line with previous research where the majority of respondents were at a score of 0 or the level of no nausea and vomiting as much as 60.8%. While 39.2% were at score 3, namely nausea > 30 minutes or vomiting > 2 times. According to previous research, the incidence of nausea and vomiting within 24 hours after surgery can increase if the respondent has 3 to 4 risk factors. Risk factors for nausea include age, female gender, smoking history, PONV history, prophylaxis history, and surgical factors [19,20,30].

According to the researcher, the description of the incidence of PONV in this study is the level of risk experienced by respondents. A total of 47 respondents had at least 3 risks that caused PONV. Three risk factors that increase the occurrence of PONV in this study are a history of not smoking, a history of opioid use, and a history of previous PONV. In addition, the most PONV was experienced by respondents with a diagnosis of incomplete abortion, namely, 26 people and 4 of them experienced severe PONV. Incomplete abortion is the removal of the remaining

conception that is still left in pregnancy less than 20 weeks of age. Expulsion of this tissue can have a psychological impact [3,31–33]. The psychological impact that arises varies, short-term can be anxiety. Anxiety activates a stress response that causes an increase in stomach acid, resulting in uncomfortable sensations in the stomach and gastrointestinal tract such as nausea and vomiting [20,32,34,35].

Limitations and Future Research

The limitations in this study are the first lack of respondents who fall into the inclusion criteria during the study time, because there is a change in the type of hospital from B to A at Prof. Dr. Margono Soekarjo Purwokerto Hospital from April to May, resulting in a decrease in the number of cases that fall into the inclusion criteria and causing not fulfilling the minimum sample. Both researchers did not conduct a correlation test so they could not see the relationship between variables. For future researchers, it is hoped that they can develop research that has been done at this time such as looking at the relationship between risks to the incidence rate of nausea and vomiting using bivariate analysis. Or see other images with different disease diagnoses, types of anesthesia, and surgery.

Conclusion

The majority of respondents were in early adulthood and had been diagnosed with incomplete abortion. None of the patients were smokers, and all had a history of opioid use. A proportion of the respondents had experienced postoperative nausea and vomiting (PONV), with most cases classified as mild. PONV was more frequently observed in individuals diagnosed with incomplete abortion, among whom a small subset experienced severe symptoms

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Conflict of Interest Statement

The authors have confirmed that they have no competing interests.

Data Availability

The datasets used or generated in this study are available from the corresponding author upon reasonable request.

Author Contributions

Winarni: Conception and design of the study, Search Data Base, Methodology, Analysis Risk of Bias, Data Analysis and Interpretation, Writing, Review, and Editing. **Asmat Burhan:** Study conception and design, search database, methodology, data analysis, and interpretation, and writing, review, and editing. **Tophan Heri Wibowo:** Conception and design of the study, Search Database, Methodology, Data Analysis, and Interpretation, Writing, Review, and Editing. **Made Suandiaka:** Interpretation, Writing, and Review.

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